

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (currently amended) An electric device (201, 301) for connecting an analogue data transfer device (202) by means of a control unit (203) to a digital transfer system, comprising means for connecting to a data transfer device with a twin cable (204), characterized in that it comprises

- a current amplifier arrangement (214, 314, 340) for looping a certain current fed into the twin cable from its other end,

- a first current switching device (219) for switching a first control current to the current amplifier arrangement, and

- a second current switching device (220) for switching a second control current to the current amplifier arrangement,

wherein an impedance of a flowing path of the first control current in said first current switching device and an impedance of a flowing path of the second control current in said second current switching device make an electrical potential of said current amplifier arrangement to float in respect of a supply voltage of the electric device.

2. (original) A device according to Claim 1, characterized in that it comprises a first supply voltage

connection (226) for providing a voltage level which is higher than any voltage level occurring in the twin cable (204), and a second supply voltage connection (227) for providing a voltage level which is lower than any voltage level occurring in the twin cable (204), whereby said first current switching device (219) is coupled to the first supply voltage connection and said second current switching device (220) is coupled to the second supply voltage connection.

3. (original) A device according to Claim 2, characterized in that said first current switching device is a double current mirror (219) with a first output (222) and a second output (223), and said second current switching device is a second current mirror (220) with a control input (225) and an input for the controlled current (224), whereby

- the first output (222) of the double current mirror is coupled to the current amplifier arrangement, and the second output (223) is coupled to the control input (225) of the second current mirror, and

- the input for the controlled current (224) of the second current mirror is coupled to the current amplifier arrangement.

4. (original) A device according to Claim 3, characterized in that said double current mirror (219) comprises a control input (221), whereby said device comprises means (206, 210, 211, 231, 351) for forming the signal to be led to the

control input of the double current mirror as a sum of the signal corresponding to the measured voltage of the twin cable and the alternating voltage signal given by the control unit.

5. (original) A device according to Claim 4, characterized in that said means for forming the signal to be led to the control input of the double current mirror comprise an isolation amplifier (210, 351) coupled to the twin cable and a current generator (231) coupled to the output of said isolation amplifier via a low pass filter (211), and means for summing the alternating current signal (206) given by the control unit to the signal received from the output of said low pass filter.

6. (original) A device according to Claim 4, characterized in that said double current mirror also comprises an input of the enable/disable type for controlling the double current mirror by means of selection pulses (207) given by the control unit.

7. (original) A device according to Claim 1, characterized in that said current amplifier arrangement comprises a first current amplifier (314) and a second current amplifier (340) connected in parallel to the twin cable, which constitute a complementary pair.

8. (original) A device according to Claim 7, characterized in that

- it comprises a first supply voltage connection (226) for providing a voltage level which is higher than any voltage

level occurring in the twin cable, and a second supply voltage connection (227) for providing a voltage level which is lower than any voltage level occurring in the twin cable, whereby said first current switching device (219) is coupled to the first supply voltage connection and said second current switching device (220) is coupled to the second supply voltage connection, and

- said first current switching device is a double current mirror (219) with a first output (222) and a second output (223), and said second current switching device is a second current mirror (220) with a control input (225) and an input for the controlled current (224),

whereby the first output (222) of the double current mirror (222) is coupled to the first current amplifier (314), and the second output (223) is coupled to the control input (225) of the second current mirror, and the input for the controlled current (224) of the second current mirror is coupled to the second current amplifier (340).

9. (currently amended) A method for simulating an analogue telephone apparatus in a twin cable connected to a data transfer device, characterized in that

- the loop current fed into the twin cable from its other end is amplified by means of a current amplifier arrangement, and

- said current amplifier arrangement is controlled by means of a first current switching device and a second current switching device and an electrical potential of said current amplifier arrangement is made to float in respect of a supply voltage of the first current switching device through an impedance of a current path in said first current switching device and an impedance of a current path in said second current switching device make.

10. (original) A method according to Claim 9, characterized in that the control of a current amplifier arrangement by the first current switching device and the second current switching device is used

- for transmitting audio frequency signals between a telephone exchange and a digital transfer system,

- for switching a loop current in a twin cable,

- for transmitting selection pulses from a digital transfer system to a telephone exchange and

- for electrical isolation between components connected to the twin cable and components connected to the digital transfer system.

11. (new) An electric device (201, 301) for connecting an analogue data transfer device (202) by means of a control unit (203) to a digital transfer system, comprising means for connecting to a data transfer device with a twin cable (204), characterized in that it comprises

- a current amplifier arrangement (214, 314, 340) for looping a certain current fed into the twin cable from its other end,

- a first current switching device (219) for switching a first control current to the current amplifier arrangement, and

- a second current switching device (220) for switching a second control current to the current amplifier arrangement, and

- a first supply voltage connection (226) for providing a voltage level which is higher than any voltage level occurring in the twin cable (204), and a second supply voltage connection (227) for providing a voltage level which is lower than any voltage level occurring in the twin cable (204), whereby said first current switching device (219) is coupled to the first supply voltage connection and said second current switching device (220) is coupled to the second supply voltage connection.

12. (new) A device according to Claim 11, characterized in that said first current switching device is a double current mirror (219) with a first output (222) and a second output (223), and said second current switching device is a second current mirror (220) with a control input (225) and an input for the controlled current (224), whereby

- the first output (222) of the double current mirror is coupled to the current amplifier arrangement, and the second

output (223) is coupled to the control input (225) of the second current mirror, and

- the input for the controlled current (224) of the second current mirror is coupled to the current amplifier arrangement.

13. (new) A device according to Claim 12, characterized in that said double current mirror (219) comprises a control input (221), whereby said device comprises means (206, 210, 211, 231, 351) for forming the signal to be led to the control input of the double current mirror as a sum of the signal corresponding to the measured voltage of the twin cable and the alternating voltage signal given by the control unit.

14. (new) A device according to Claim 13, characterized in that said means for forming the signal to be led to the control input of the double current mirror comprise an isolation amplifier (210, 351) coupled to the twin cable and a current generator (231) coupled to the output of said isolation amplifier via a low pass filter (211), and means for summing the alternating current signal (206) given by the control unit to the signal received from the output of said low pass filter.

15. (new) A device according to Claim 13, characterized in that said double current mirror also comprises an input of the enable/disable type for controlling the double current mirror by means of selection pulses (207) given by the control unit.

16. (new) A device according to Claim 11, characterized in that said current amplifier arrangement comprises a first current amplifier (314) and a second current amplifier (340) connected in parallel to the twin cable, which constitute a complementary pair.

17. (new) A device according to Claim 16, characterized in that said first current switching device is a double current mirror (219) with a first output (222) and a second output (223), and said second current switching device is a second current mirror (220) with a control input (225) and an input for the controlled current (224),

whereby the first output (222) of the double current mirror (222) is coupled to the first current amplifier (314), and the second output (223) is coupled to the control input (225) of the second current mirror, and the input for the controlled current (224) of the second current mirror is coupled to the second current amplifier (340).